



**NOAA Teacher at Sea
Jacquelyn Hams
Onboard NOAA Ship RAINIER
July 22-August 11 2006**

July 31, 2006

Science and Technology Log

1100

Weather: Partly cloudy
Visibility: 10 nm
Wind direction: 330
Wind speed: 10 knots
Sea Wave height: 0-1
Swell Waves direction: /
Swell height: /
Seawater temperature: 10 degrees C
Sea level pressure: 1016.5 mb
Temperature dry bulb: 12.2 degrees C
Temperature wet bulb: 10.6 degrees C

Today I practice the skills necessary to navigate underway using radar navigation and dead reckoning. Radar navigation is a technique by which radar is used to determine the distance from the ship to known points on shore. These distances are then transferred to the chart to plot the ship's position. Radar navigation is useful for fixing the ship's position in reduced visibility, and as a check against visual means even in good weather.

Dead Reckoning is a method of estimating the ship's position based on assumptions about ship speed, heading, length of time underway on that heading, and other influences such as current or wind. In general, if the speed of the ship and length of time the ship has been on a particular heading is known, the simple formula "Distance = Speed x Time" is used to estimate distance run.

To plot the estimated current ship position using dead reckoning, we lay down an approximate track line on the chart from our assumed starting position in the direction the ship was traveling and for the distance the ship traveled in nautical miles. Dead Reckoning is used by NOAA as a backup to the more accurate means of fixing the ship's position in the event that all electronics are lost and there are no visible landmarks for reference. The navigators aboard the RAINIER also keep dead reckoned position, or



TAS Jacquelyn Hams in the pilot house

"DR", current on their charts to use as a check on their position fixes. The interpretation of radar images, radar navigation, and dead reckoning are definitely acquired skills that I plan to work on during the remainder of this cruise.

Personal Log

The RAINIER held a beach party after dinner. We were transported to a nearby beach in Northeast Bight on Nagai Island for a few hours of relaxation. The beach is rocky and composed of andesite and tuff. The andesite is much lighter in color than I usually see. I wasn't sure it was andesite until I found a rock with the characteristic needle-like pieces of shiny black basalt (obsidian).

Lesson of the Day: Navigation underway

Terms of the Day: Radar, Dead Reckoning

Bonus questions: What does anchors aweigh mean?

Recommended reading: Radar Navigation Manual, Publication #1310, .6th edition, 1994, and Defense Mapping Hydrographic Topo Center.